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PREHISTORY OF THE LEVANT ❖9651

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INTRODUCTION

The buried cultural treasures of the Near East have stimulated archaeologists since the late eighteenth century, but such treasures were located either in the great plains of Mesopotamia or the Nile valley. These are the two important tips of "the Fertile Crescent" as named by the American historian, H. Breasted, while the Levant, in its limited geographical meaning, is the median portion. In this part of the ancient Near East there were no huge mounds, large rivers, or vast floodplains, but rather a variety of small-scale landforms. In a west-east transect 200–300 km long, one can recognize the coastal strip, the mountainous and hilly ridges, the Jordan-Orontes Rift Valley, and the eastern mountains or plateaus that slope into the Syro-Arabian desert. In such a transect one moves from a typical Mediterranean climate with more than 600 mm annual precipitation and a fully Mediterranean vegetation through Irano-Turanian vegetation to the Saharo-Arabian arid lands. The same is true for a north-south bioclimatic transect, about 1100 km long, from the flanks of the Taurus Mountains to the tip of the Sinai peninsula (53; See Figure 1).

It was only at the turn of the twentieth century and through its first two decades that prehistoric research in this area was initiated by European scholars. The discoveries of pioneers such as L. Lartet, G. Zummoffen, P. Bovier-Lapierre, H. E. Clark, M. Blanckenhorn, P. Karge, and others demonstrated the potentials of the Levant. Pleistocene lake sediments, river terraces, cave sites, surface scatters of Palaeolithic artifacts suggested that more thorough studies could be worthwhile. The years between the First and Second World Wars were the formative period when the basic framework for prehistoric research of the Palaeolithic was built up by enthusiastic excavators such as F. Turville-Petre, D. Garrod, R. Neuville, J. F. Ewing, A. Bergy, A. Rust, M. Stekelis, and others. They carried out intensive and

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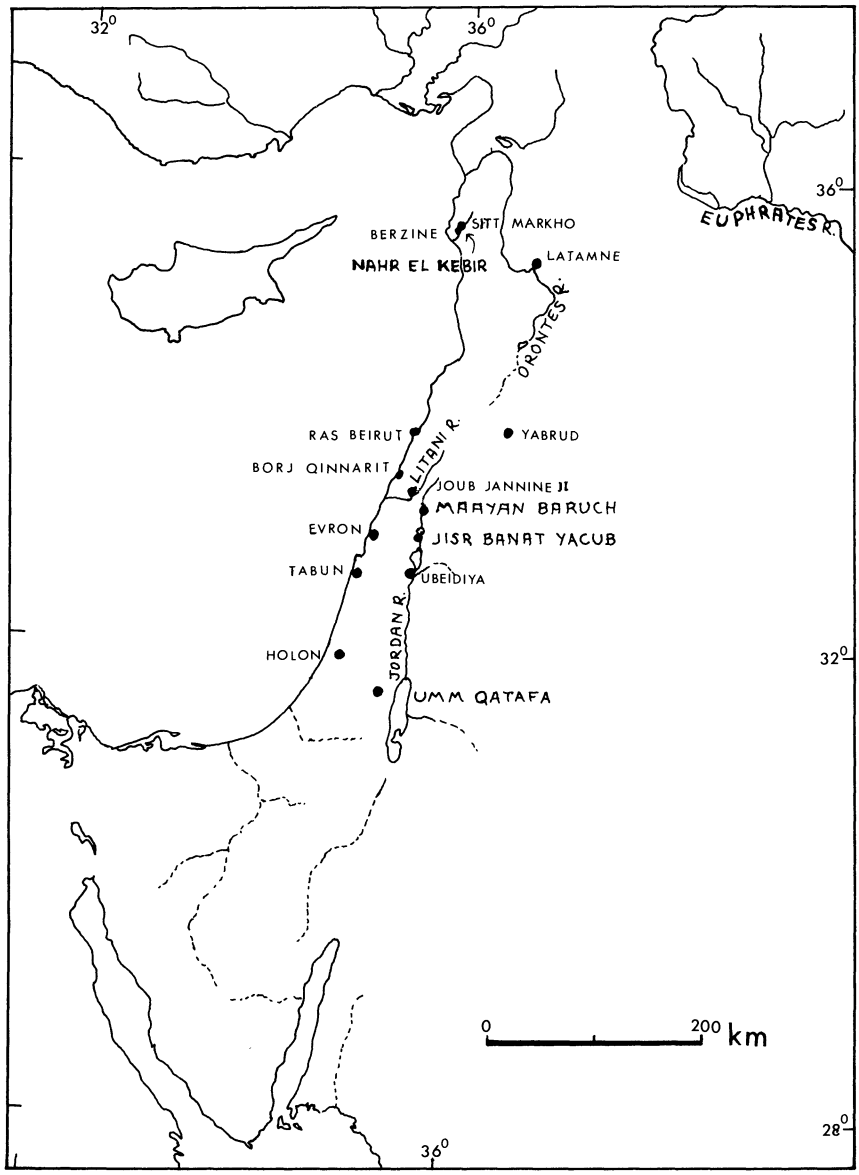


Figure 1 Map of the Mediterranean Levant showing the location of the main Lower Palaeolithic sites.

extensive excavations, partial surveys, and Quaternary studies, mainly in cave sites, rock shelters, and old shore lines near Ras Beirut, Yabrud, Mt. Carmel, the Judean desert, and the Jordan valley. At the same time their colleagues established the archaeological sequence for the Chalcolithic, Bronze, and Iron Ages. The discovery of written texts dated to the fourth millenium B.C. in Mesopotamia and in Egypt imposed an accepted separation between prehistory and historical (or biblical) archaeology. The Chalcolithic period and to some extent the Neolithic thus became a no man's land. This situation, well known to researchers in Levantine archaeology, explains why there are basically two schools represented in the field. One school has trained archaeologists who are interested in ancient history and the Iron and Bronze Ages, but who are infrequently, according to circumstances, forced to excavate Chalcolithic or Neolithic layers. The second school has been Stone Age minded and has generally an "environmental approach" (stressing geologic, palaeontologic, palynologic aspects, etc) that sometimes has taken anthropological considerations into account. Only a minority of archaeologists have dedicated their careers to the period between the Palaeolithic and the Bronze Age.

The generation of scholars who laid the foundations for today's prehistoric research in the Levant introduced their European conceptual framework concerning chronological and cultural taxonomy, prehistoric technology and typology, methods of fieldwork, etc. As a result, the terminology equating named time units with specific stone industries was established following the European example. The term "Palaeolithic" (subdivided into Lower, Middle, and Upper or Late) was used for the description and dating of Pleistocene lithic industries with a priori fixed features. The term "Mesolithic" was adopted for a certain microlithic industry considered also as Post-Glacial (or of Holocene age). Finally, the term "Neolithic" has had to be expanded in recent years in order to incorporate prepottery assemblages on the basis of similar stone artifacts, in contrast to the European definition where pottery was and is an important characteristic attribute.

Almost since the beginning there has been a close correlation between Quaternary research and the study of prehistoric sites. The subdivision of the Quaternary was mainly based on biostratigraphic evidence (following mammalian assemblages) and climato-stratigraphic data (following glacial fluctuations, sea-level changes, and loess accumulations). In spite of the fact that the Levant was not directly affected by the northern hemisphere glaciers, the European glacial chronology was adopted. Terms designating Alpine or Northwestern European glacials were used in labeling geomorphological phenomena interpreted as pluvials. The equation glacial = pluvial was common in the Levantine literature until the 1950s. Due to

serious criticism as to its validity, this equation was omitted but was readopted from the 1970s onward with slightly different reasoning (9, 10, 31, 32, 58). During this process, the notion of regional studies entered into the Levantine prehistoric research milieu. The progress made in deep sea-core studies, the loess sequence of Central Europe, and their correlation with palaeomagnetic/potassium-argon (K/Ar) time scale have made it clear that well-dated regional sequences in the Levant are of prime importance. Only after the establishment of local sequences in such a geomorphologically diversified region could one pursue long-distance correlations. Before such detailed radiometrically dated sequences are available, it is presumptuous to attempt to answer questions relating to possible migrations, diffusion of technologies, ideas, etc.

At this point a word in defense of Levantine researches should be said. Even a cursory reading of the literature concerning Quaternary studies of the Levant will show that the natural sources available for study and dating were scarce. Besides the many shoreline relicts of Lebanon and Syria (32), most of the Israeli evidence was buried below the present surface (31). In the hilly and mountainous areas only wadi and river terraces were available and these—apart from the Litani River, Nahr el Kebir, and the Orontes Rivers—are mainly of Late Pleistocene age. But even the older terraces in those rivers represented only major periods of accumulation and did not provide a basis for detailed chronologies. The existing or extinct lakes were either in a sinking tectonic depression (i.e. the Hula) or too young in relation to the required lengthy sequence (i.e. Lake Kinneret). Finally, volcanic eruptions were of limited geographical extent and therefore have reduced the possibilities for detailed K/Ar datings. Full palaeomagnetic sequences have not yet been worked out, and in spite of the potentials within sedimentary sequences, their fragmentary nature and the lack of datable materials have discouraged scholars from attempting this task.

Detailed knowledge of Quaternary events is directly related to the deciphering of archaeological problems. However, additional specific difficulties in interpreting the Levantine archaeological record should be mentioned here.

It is unnecessary to evaluate in length the contributions made through the use of theory in archaeology. Many of the subjects raised and discussed by the American and English schools are valid in Levantine prehistory. However, in my view the most crucial ones which are directly reflected in fieldwork are: the definition of a site; the various possible interpretations of the contents of a site or an assemblage; the understanding of intrasite dynamics as a component within the system of the immediate and regional environment; the interpretation of intersite variability and its reflection on the taxonomy to be used in combining more than one studied site or

assemblage into a well-defined entity; the means for recognizing cultural change and its meaning and the use of ethnographic data.

A few of these subjects are discussed in the literature on Levantine prehistory (5, 6, 42, 43). In the following pages I will try with examples to point out the importance of these questions to the formulation of future work in the Near East. However, as the last two decades have seen great progress in the data base for Levantine prehistory, I will limit my review to the Palaeolithic and the Pre-Pottery Neolithic.

LOWER PALAEOLITHIC

This is the longest chapter in mankind's history, beginning with the earliest tool makers, about two million years ago in East Africa, and ending during the Last Interglacial, sometime between 128,000–75,000 years B.P. The most impressive bulk of data—including abundance of artifacts in primary contexts, numerous animal bones, and, above all, the largest amount of hominid remains—have come from sub-Saharan Africa. Even a cursory investigation demonstrates that the principal reason for this abundance was the frequent occurrence of well-preserved lacustrine, fluvial, and alluvial sediments, relicts of past lakes and their immediate environments. Many of these were located in or along the African Rift Valley, which in addition to forming two parallel grabens in East Africa, is also relatively wide, attaining 60 km. Its northward continuation is expressed geomorphologically in the Red Sea and the Levantine Rift Valley, named in its various sectors as the Arava, Jordan, Beqa'a, and Orontes valleys. In comparison to its African counterpart, the Levantine Rift Valley is narrow (5–20 km) and deep. The altitudinal difference between the morphological shoulder of the Rift and its base frequently attains several hundred meters and occasionally even 1500–2000 m. To illustrate this unique situation the reader is reminded that the lowermost topographic location on the surface of the earth is the Dead Sea (400 m below sea level), which is a part of this Rift Valley. These special physiographic conditions have caused problems in locating well-preserved Lower to Middle Pleistocene formations in the Levantine Rift. For example, most of the bottom of the Jordan valley is covered by relicts of the Upper Pleistocene lake known as the Lisan Formation (2, 31). Moreover, the majority of contemporaneous formations in the Israeli coastal plain, a favorable landscape from the hunter-gatherer's point of view, are submerged and can be reached for the most part only in bore holes. Tectonics and erosion have played an important role in the Near East in either hiding or destroying archaeological occurrences that date to the Lower and the Middle Pleistocene. Numerous surface concentrations or isolated handaxes and many rolled or fresh Acheulian artifacts in wadi

gravels or river terraces have testified to the amount of obliterated archaeological evidence (22, 28, 32, 58). Infrequent in situ occurrences were found in riverine situations, lacustrine and marshy environments, and cave sites (7, 27, 46, 56, 57).

When assemblages of these excavated sites (which were generally accompanied by faunal remains) are taken, together with collections made in well-stratified formations, the Levantine Lower Palaeolithic sequence could be constructed. For this purpose we refer only to the most secure Quaternary sequences in the Levant. These have been worked out along the Lebanese and Israeli littorals and in the Orontes, the Nahr el-Kebir, the Litani and the Jordan valleys (7, 9, 22, 31, 32, 58). Between these regions some major environmental variability could be detected. While the sequence of the Jordan valley was mainly of lacustrine formations, in the other three river valleys fluviatile terraces constituted the major sedimentary accumulations. Additional geomorphological differences between the Lebanese and the Israeli coasts could be noted. The shores of the former were carved into limestone escarpments (where several karstic caves occur in the immediate vicinity of the sea). The latter is as a whole a flat plain where beach and fossil dune ridges (known as *kurkar*) and red-loam palaeosols (*hamra*) marked the advances and retreats of the sea and its contemporaneous vegetational fluctuations.

Bifaces, or handaxes as they have most commonly been called, though not always the dominant tool type, quantitatively have been employed as the basis for defining the Acheulian complex and its subdivisions. Typological studies incorporating metrical attributes have been used for the definition of stages such as Lower, Middle, and Upper Acheulian (2, 22, 28, 58). This classification was based on the intensive use of the Bordian typology, the incorporation of Roe's refinement index and his scatter diagrams, and Leakey's type list (11, 39, 55). However, there does not yet seem to be a consensus of opinion among Near Eastern prehistorians as to the taxonomal classification of the earlier sites. Only the Late Acheulian assemblages have generally been accepted on the basis of typology and chronological consideration.

The earliest evidence for man-made artifacts has come from deposits dated by their stratigraphic position. Neither the Borj Qinnarit site on the Lebanese coast nor Sitt Markho in Nahr el Kebir valley furnished faunal or palaeomagnetic data to support their claimed earlier age. The lithic assemblage of Borj Qinnarit was too small (17 artifacts) to classify it securely as belonging to the non-Acheulian complex (such as the Oldowan). Its investigator therefore suggested the term "Para Acheulian" (32). The second site contained rolled chopping tools, bifaces, cleavers, and light-duty tools, and has been compared with the 'Ubeidiya assemblages.

'Ubeidiya still remains the most intensively and extensively excavated Lower Palaeolithic site in the Levant. Located near Lake Kinneret in the Jordan valley, it lies about 160 to 220 m below sea level. Its curious geologic formation made it both available for research and difficult to excavate (7, Figure 2). The exposed layers of the 'Ubeidiya Formation accumulated within a freshwater lake and its surroundings, and later, during an unknown age of the Middle Pleistocene, were tilted, folded, and faulted. As a result, many layers could have been excavated for many dozens of meters along their strike, though in the other direction, that of the dip, layers were limited to a few meters.

Generalized sedimentological studies have shown that most of the archaeological horizons are intercalated between two phases of the lake's expansion. These alternations seem to indicate climatic fluctuations, but the role of tectonics cannot be ruled out. However, no direct correlation with the detailed sequence of events, based on deep-sea cores, loesses, and shorelines, could be offered. The rich faunal assemblages collected within the archaeological horizons and their limnic-marshy margins have enabled overall comparisons with the Upper Biharian fauna of Hungary or the Cromerian of Western Europe (30). The possible chronological range in terms of K/Ar years should be about 1.0–0.7 m.y. Perhaps more important was the fact that the fauna of 'Ubeidiya exhibited the transition from early Lower Pleistocene to Middle and Upper Pleistocene faunas. In particular, several rodent species could be seen to be transitional to their appearance as new species. On the other hand, these assemblages have enabled a possible reconstruction of the environment in which man, perhaps a *Homo erectus,* hunted or scavenged.

The palaeoenvironments of 'Ubeidiya included a hilly area covered with mixed Mediterranean forest with cliffy exposures, a wadi and its alluvial fan penetrating in the form of a delta into the lake, pebbly beaches, and open grasslands at the bottom of the valley. The dominant mammals and rodents of the forests indicated that the climatic regime was more humid and less warm than that of the Jordan valley today.

The series of lithic assemblages were uncovered in two principal types of microenvironment: on pebbly beaches and their lacustrine margins and in wadi gravels. The total number of layers containing even rare artifacts is 62, but only 12 were excavated systematically and provided sufficiently large samples for technotypological studies (7, 63). The assemblages exhibited a high degree of correlation between raw material and tool types. Choppers were made of flint, spheroids of limestone, while the group of bifaces and picks were mainly from basalt (lava) but with a significant number made of flint and limestone. There is great similarity in the manner in which the artifacts were manufactured in the various levels by direct hard

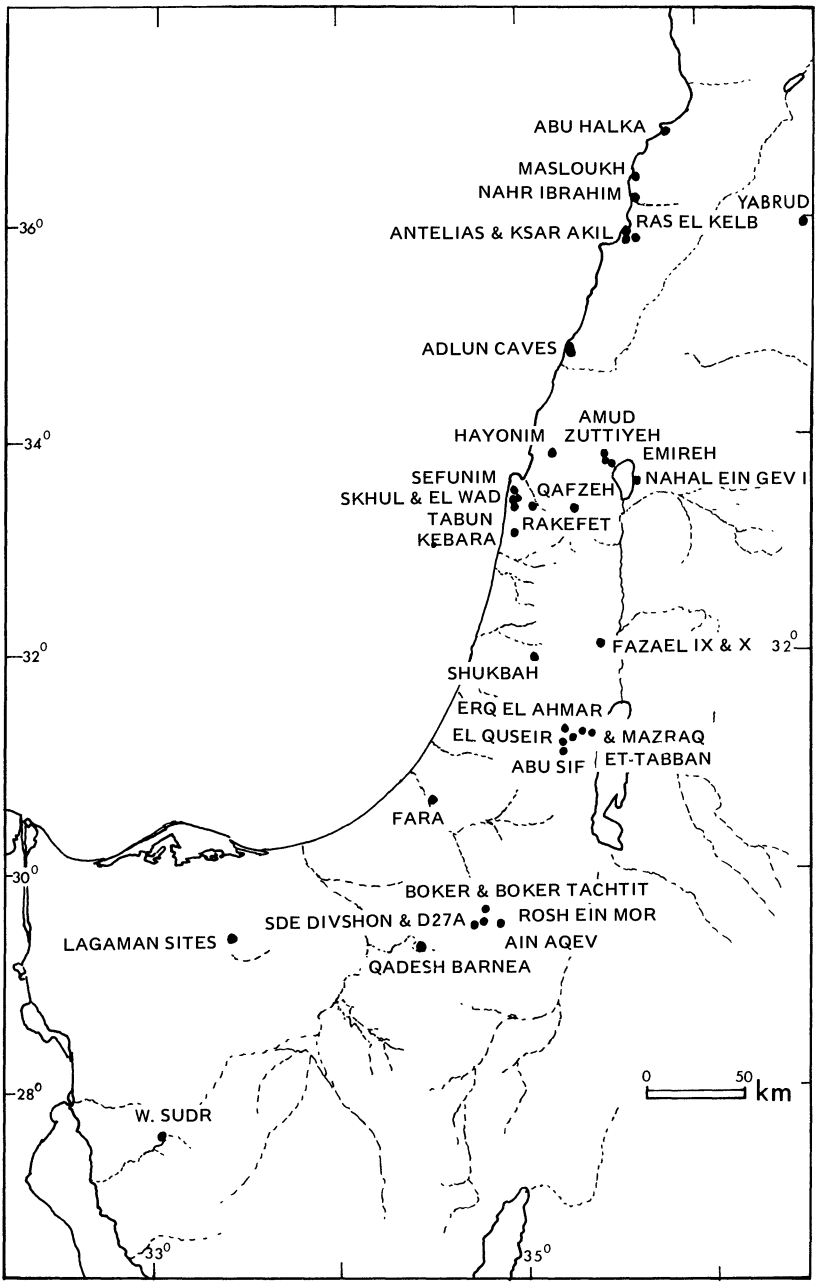


Figure 2 Map indicating the location of most of the known Middle and Upper Palaeolithic sites.

percussion. However, there was a lack of standardization of forms among the tool groups, a feature common in Lower Palaeolithic assemblages.

Quantitative studies have shown that there were four major kinds of assemblages, each differing in the relative frequencies of the major tool groups. The first and earliest contained only choppers and spheroids and no bifaces. In the second the bifaces/picks amounted up to 10%. The third contained only choppers and bifaces/picks and no spheroids. In the fourth (later) type of assemblage, bifaces/picks decreased again. The reappearance of spheroids in the upper part of the sequence could be interpreted as redeposition of earlier, derived artifacts. Checking this quantitative variability against the nature of the environment from which each assemblage is collected, the following picture emerged. The assemblage rich in bifaces/picks is rolled, indicating that it had been transported from the hilly, forested area a few kilometers away. All the other assemblages were found either in wadi bed, beach, or lacustrine-marshy deposits and contained many fresh artifacts. Thus the variability between assemblages could not easily be interpreted as the result of specific tasks carried out in the various deltaic microenvironments.

The second extensively excavated site is Latamne, located on a high terrace of the Orontes Valley (17, 18). A level containing a large number of tools and a few bones was uncovered, with the major concentration of bifaces around a cluster of limestone cobbles. Additional mammalian bones were collected in adjacent gravel quarries, stratigraphically located under the site. These indicated a date later than 'Ubeidiya but earlier than Jisr Banat-Yacub (7). Possible contemporary sites included Evron-Quary, in the Galilee coastal plain, and Berzine, in the 100 m terrace of Nahr el-Kebir. This general contemporaneity based on stratigraphic considerations resulted in the proposal to identify two industrial facies (22). One facies continues the typological tradition of 'Ubeidiya with the presence of trihedrals and polyhedrons (which could be interpreted as chopping tool or spheroid variants) alongside with bifaces, choppers, light duty tools etc, and was present in inland sites. The second facies is dominated only by bifaces and choppers and occurs at Berzine, Evron-Quarry, etc, and could be considered a coastal facies. Both facies have been designated by some scholars as Middle Acheulian following the French sequence of the Acheulian Industrial complex (22).

On the basis of a tentative correlation between deep-sea cores and circum-Mediterranean shorelines it seems that the chronological range of the Late Acheulian in the Levant spanned at least 200,000 years. More than 200 sites and find-spots from various ecological zones are known today. Their location in the desertic regions of the Negev, northern Sinai, the Syrian desert, or in the river valleys, lakeshores, hilly areas, the coastal plain, and even

caves has indicated that the Acheulian hunter-gatherer was not limited in his movements by technical restraints. Unfortunately, no long sequences of Late Acheulian floors are known. The available stratigraphies were of relatively little help in ordering this bulk of data chronologically. An exception was the site Jisr Banat Yacub in the Hula Valley, where several other Acheulian assemblages made of flint were found above an industry of bifaces and flake cleavers made of basalt (31). The samples were too small for detailed technotypological comparisons. However, the assemblage of the earliest levels still remains a unique phenomenon in the Levant. In this assemblage the tool group of bifaces was equally divided between bifaces and cleavers, all made of basalt. This does not seem to be a local adaptation but rather a direct cultural connection with Africa (62).

The bulk of the Late Acheulian collections from Israel has been subdivided on the basis of the dominant biface forms (28) and seems to be valid in Syria and Lebanon as well, since the major forms recur (22).

Three of these groups were dominated by the oval and cordiform aspects and the increasing use of Levallois technique. It is the fourth group, defined as Acheulian of Yabrudian facies, that has presented us with both the problems of the Last Interglacial and the question of regional variability during this period.

Let us first examine the geological evidence as recently summarized by Farrand (25). Three massive transgressions have been observed on the Lebanese coast during this epoch, known also as Eemian. While the Adlun sites and Naame were directly related to the sea movements, the Tabun cave sequence was only indirectly influenced by these shifts. Farrand's interpretation correlated the two earliest marine advances (called Enfean I and II) with the Acheulian of Yabrudian facies (including the enigmatic Amudian/Pre Aurignacian industry). The third shoreline, the Naamean, was contemporary with the top of Tabun E and the transition to layer D, and also truncates the Mousterian site of Naame. If this correlation is correct, then the general contemporaneity of two completely different industries is proved. But perhaps the picture was even more complicated, as shown by recently collected sites in Syria.

The Acheulian of Yabrudian facies has been recognized only in a limited area of the central part of the Levant. The sites of Yabrud rockshelter I, Adlun caves, Masloukh cave, Tabun cave, and Zuttiyeh cave (Figure 2) have provided the artifacts for the definition of this industry. It was dominated by small pointed bifaces, mainly of Micoquian type, and a rich scraper group, commonly made on thick flakes, reminiscent of the Charantian scrapers in France. The Levallois technique was present in negligible percentages. From under the layers bearing this industry in Zuttiyeh cave came the earliest securely dated fragmentary hominid skull in the Levant (29).

Two possibly contemporary industries have recently been defined in Syria. The first in the Nahr el-Kebir valley is called Acheulian of Samokian facies and is characterized by small pointed bifaces, large numbers of choppers, and the consistent use of the Levallois technique (22). The second, the Acheulian of Defaian facies, found in the Orontes valley, is quite similar to the former but differs in the specific method of its Levallois technique (58).

This problematic period has raised two more questions that should be examined here. First was the Yabrudian industry which mainly consisted of the thick scraper tool group, many of the canted type, and was devoid of bifaces. It existed in such a form only at Yabrud I and might be only a functional facies of the Acheulian of Yabrudian facies, as suggested by several scholars (12, 20).

The second enigmatic industry was the Amudian, isolated stratigraphically as an intercalation within the sequence at Tabun, Abri Zumoffen (in Adlun), and Yabrud I (where it was originally called Pre-Aurignacian). While the sample from Yabrud I more closely resembled an Upper Palaeolithic industry, all three assemblages, characterized by backed knives, some endscrapers, and burins, are considered today to represent only a functional aspect of the Acheulian lithics. However, the debate is not yet finished, and perhaps microwear studies will throw light on the specific tasks executed by the makers of these assemblages.

The use of the Levallois technique, a special knapping method where the flake/point/blade form was dictated by special core preparation, was evidenced during the Late Acheulian industries. The most intensive use of this technique was, however, during the following period termed orthodoxly the Middle Palaeolithic.

Summing up the Lower Palaeolithic, several conclusions can be reached. There still remains a great lack of basic data concerning hominid remains, variability in site size, intrasite distributions of bone and artifacts, etc. There is an urgent need for modern excavation of Acheulian living floors from which we may be able to learn about the behavior patterns of Early Man. After all, he had witnessed considerable change in landforms in the Levant, accompanied by a continuous change in fauna from a dominance of tropical over Euroasian elements to the almost complete disappearance of the former (64), indicating a gradual process of desertification. During this long period tool kits changed very slowly, presenting a similar trend to those of the European Acheulian sequence. It is only in the early phase that African similarities could be detected (such as in the lithics of 'Ubeidiya) or perhaps direct African origins of their makers, as with the Late Acheulian assemblage of Jisr Banat Yacub. The artifactual variabilities do not as yet exhibit any special adaptation of Early Man to his Levantine environments. This slow rate of evolution, interpreted as an expression of small bands of subhu-

mans who did not communicate orally, is not different from the overall evolution of his contemporaries in the Old World (33). It was only during the early part of the Upper Pleistocene that the special character of the Levant emerges.

MIDDLE PALAEOLITHIC

Under this term we have generally included all post-Acheulian but pre-Upper Palaeolithic industries, although this has become rather a vague definition. Thus a simpler one was required for this review. I have referred in this section to the Mousterian and possible contemporary industries. The Mousterian has been well defined in the Levant by its consistent use of the Levallois technique, dominance of either racloirs or points or both, and has been the subject of several syntheses in recent years (20, 34, 50, 61).

The crucial aspect which needed to be resolved satisfactorily before any hypothesis could be presented was the chronological ordering of the various sites. These were numerous and amount today to more than 50, distributed over all the Levant including the desertic lowlands of Palmyra, the Negev highlands, the mountains and coast of Lebanon, Mt. Carmel and the Judean hills, as well as orographic deserts like the eastward slopes of the Anti-Lebanon mountains and the Judean desert. However, only sites directly related to changing sea levels could be used for dating, with the additional interpretation of sedimentological studies in a few cave sites, together with scanty palynological evidence from the Lebanese coast and the Negev (25, 31). As some of the difficulties have already been presented above, only the major points will be referred to here. The site of Naame in Lebanon has shown that Mousterian deposits are intercalated between two sea transgressions named Enfean II and Naamean. The final retreat of the Naamean has been considered to represent the onset of cold and wet conditions in the Levant, and in Tabun cave this was marked by the switch from the Acheulian of Yabrudian facies to the Mousterian. These kinds of industries presumably continued to exist in Yabrud I, an inland site. To that early part of what has also been called the Last Pluvial, the Mousterian of the Negev was related (42, 59) as were a few sites in the Judean desert (such as Abu Sif) and most of the Qafzeh cave sequence (Figure 2).

The scarce radiocarbon dates have indicated that this stage predated 50,000 years B.P. The upper Mousterian sequence was basically drier and was interrupted by one or more erosional gaps, well expressed in the cave sediments of Tabun, Qafzeh, and Shukba. The mammalian fauna reflected in the bone counts from cave sites has basically supported this generalized picture. A rare case, such as the high frequency of fallow deer in the chimney of Tabun, has lately been well explained (35) as being the result

of using the place as an animal trap. Supportive evidence has come from the microvertebrates (64), and the shift from the early Mousterian to its later stage was accompanied by the disappearance of certain microfaunal elements and the establishment of modern, recent types.

These minimal remarks with additional observations concerning travertine accumulations in wadis and their alluvial deposits, the formation of the Lisan lake which covered almost the entire surface of the Jordan valley, etc has given us an idea of the changing environments through which Mousterian man lived. The question of who this man was has been illuminated by the discoveries of isolated human remains in Ksar Akil, Kebara, Tabun and Amud caves, and the two cemeteries uncovered in Skhul and Qafzeh caves. Among these complete and fragmentary skeletons scholars have recognized both Neanderthals and modern types as well as intermediate forms. The cluster of Tabun, Kebara, and Amud has correlated well with the Shanidar specimens from the Zagros and are of the more archaic type, while those of Qafzeh and Skhul are the more modern ones. It has, therefore, been crucial again to resolve the chronological argument because it has left options of either contemporary populations or linear evolution of man.

Mortuary practices started with Mousterian man. Intentional, well-organized burials were found in Skhul cave, but the clearest evidence comes from Qafzeh cave. There in a double burial a flexed adult and a child (6 years old) were found together. In another grave a child 13 years old was lying on its back with hands folded on his chest on which antlers of fallow deer were carefully placed (66, 67). Mediterranean shells and ostrich eggshells were scattered in these lower levels of Qafzeh in the area of the burials.

The nomadism of Mousterian bands has been indicated by differences in the intensity of occupations. General sites bordering the Judean desert or the Jordan valley (like Wadi Amud) were poorer than the caves and rock-shelters along the Lebanese—Mt. Carmel coast. But even in these sites some layers have testified to short-term occupation, like Tabun C or the open-air site of Tirat Carmel. Similarly, the earliest levels of Qafzeh cave have indicated ephemeral habitation contrary to the upper levels. The sites on the high grounds of the mountains in Lebanon may have reflected summer activities, but spatial studies of Mousterian living floors have really been needed. Preliminary indications from Kebara and the open-air site of Fara have demonstrated the potentials of unveiling intrasite patterns of tool/-bone distribution.

Following the early studies by Garrod, Neuville, and Rust, the Mousterian industries were described and analyzed following two major models. The first one expressed the influence of Bordes's ideas on the dendritic evolution within the Mousterian industries of Western Europe and was

applied in the Levant by Skinner and Perrot (50, 61). The second model followed the early notion of Garrod and Neuville of an intrinsic evolution of the Mousterian, a view which has been supported by Copeland and Jelinek on different grounds (20, 34). Finally, a completely different approach was advocated by the work of the Binfords, who tried to analyze Mousterian assemblages as manifestations of seasonal activities within nomadic groups of hunter-gatherers.

According to the first model, the Levantine Mousterian could be divided along the lines of the Bordian technotypological type list into several types of Mousterian, each characterized by a cluster of quantitatively recognized features. Skinner's scheme included three groups: A. the Yabrudian (or Mousterian of Quina type); B. basically the Acheulian of Yabrudian facies; C. a combination of four subgroups. Actually these four subgroups form most of the Mousterian bulk in question. Each subgroup was defined on the basis of type localities: Abu Sif, Tabun, Yabrud, and Erq el Ahmar. Perrot's definitions more closely followed Bordian lines, and his groups included Mousterian of Acheulian tradition, Mousterian of Levallois facies, Mousterian of elongated points (type Abu-Sif), Typical Mousterian, and Denticulate Mousterian.

The second model was proposed by Copeland on the basis of Tabun's stratigraphy. In this cave there were differences between the major units named by Garrod as layers. Layer D, the earliest, was characterized by numerous elongated points and blades made by Levallois technique. Layer C was dominated by wide oval flakes and racloirs, and layer B by small broad Levallois points. Copeland recognized the problematic nature of this sequence as many sites could not be independently correlated to Tabun except on the basis of their lithic characteristics. However, she has suggested that in Lebanon some sites with the "Tabun C" industry were contemporaneous with others of the "Tabun B" industry.

Jelinek has treated this question from a different angle (35). By measuring the unretouched flakes/blades which formed the basic knapping product, he was able to calculate the ratio of width/thickness (as measured in the middle of each piece). Using the average and mean for each level at Tabun, he found that this ratio increased in time from the Acheulian to the latest Mousterian. In reality the major change or improvement in thinning the blanks took place from Tabun D onward. All other measured assemblages correlate well with this curve. His preliminary conclusions were that there was a clear time trajectory change within the basic Mousterian technology. This approach seems to be a promising one, but its results should be reevaluated when the chronological framework of the middle Paleolithic has been based on sounder grounds than the present hazardous correlations.

UPPER PALAEOLITHIC

The progress achieved in the study of this period during the last two decades has brought the realization that the pattern of assemblages and industries was more intricate than previously thought. Moreover, the scarcity of radiocarbon dates, the scanty but clear evidence for climatic fluctuations, and above all the large range of technotypological variability among the limited number of known and published assemblages has made the formulation of a taxonomical framework a difficult task. As a result the literature has been littered with the old taxonomies, lengthy discussions of possible chronological or cultural correlations, and remarks cautioning against using decisive terms. Under these circumstances I will mention specific site names while describing the various aspects of this interesting period (Figure 2).

A selected number of problems concerning the Upper Palaeolithic should be stated even before a cursory review of the available data is given. These can be phrased in a series of questions as follows:

1. What was the history of climatic conditions prevailing during this period between ca 40,000–17,000 B.C.?
2. Was there a technotypological transition from the Mousterian to the early Upper Palaeolithic assemblages?
3. How many technological traditions can be discerned in the Levant and what were their main features?
4. Can regional facies be recognized among the available assemblages on the basis of typological considerations?
5. What is known about nonartifactual aspects of the Upper Palaeolithic occupations?

The evidence for climatic fluctuations has been rather fragmentary. The difference between the northern Levant and the southern Levant, with the lack of sufficient radiocarbon dates, has made it a hazardous task to correlate recorded events in Iran or Turkey with the Negev or Sinai. In spite of the uncertainties, and taking the abundance of sites in desertic areas as an additional indicator, the following picture has emerged.

The transitional period from the Mousterian to the early Upper Palaeolithic was basically cold and dry. A humid phase followed later, ca 32,000 B.C., when quite a large number of sites have been reported from the Negev and northern Sinai. It turned drier again toward ca 20,000 B.C. and that tendency continued until ca 12,500 B.C. when there has been accumulating evidence for a climatic amelioration. On the whole, the Upper Palaeolithic period, when compared to the Early Mousterian, was drier and colder.

The transition from the Mousterian to the early Upper Palaeolithic industries seems today less controversial due to the independent discoveries of *Homo sapiens* in Mousterian layers at Qafzeh, the site of Boker Tachtit, and the Lebanese archaeological entity characterized by the chamfered flake/blade industry (21, 43, 67). The question of who made these tools has not yet been resolved, but modern man was already present in the Levant at that time. The technological tradition of the Levallois technique was carried on in the production of flakes, points, and blades in Lebanon and points in Boker Tachtit. The latter was an interesting example of the manufacture of both blades of Upper Palaeolithic character and points of Levallois style from the same blade cores (43). The dates from this site might still be controversial as they were older than 40,000 B.C. and fell within a cluster of several Mousterian dates. But their importance lies in the general correlation that Boker Tachtit and the Lebanese "chanfrein" industry (flakes and blades with a distal working edge formed by a transversal blow) were basically contemporary. All the Lebanese sites were situated within a radius of a few kilometers, indicating that this was the onset of regional cultural variability in the Levant. Some of the controversial sites in Israel, such as Emireh cave, could be mentioned here. Their similarity to the Lebanese material has been expressed in the dominance of flakes over blades and the exhibition of Levallois technique traits. The famous Emireh point, found originally in that industry, was later retrieved from both late Mousterian deposits and later Upper Palaeolithic levels and therefore lost its validity as a guide fossil.

The aforementioned assemblages have also demonstrated two of the major technological traditions, as yet unnamed, which prevailed during the Upper Palaeolithic. One tradition is expressed in the preponderance of flake production over blades. Blades were frequently unstandardized and in many assemblages were relatively thick. From these blanks scrapers and burins were modified, and it has been in their changing frequencies and their detailed group typologies that we have been able to differentiate between layers, sites, and even possible stages. Assemblages of this tradition have included Ksar Akil Phase A and B I, Erq el Ahmar (layers F-D), and several open-air sites in the Negev such as Sde Divshon, D27 A and Arkov (21, 43). The latest occupations were those of Boker BE layer I, Boker C (dated to ca 22,000 B.C.) and many of the assemblages collected under the label of the so-called "Atlitian" or "Upper Palaeolithic Phase V." Between the beginning of this tradition around 40,000-43,000 B.C. and its final appearance at Ein Aqev (dated to 15,000 B.C.)there were an unknown number of typological variations, and their future study could lead to possible subdivisions.

At this point a rather important note should be made. In several of the above-mentioned assemblages a coexistence of two technologies has been witnessed. The major one was flake production while the other was responsible for the manufacture of fine, generally twisted, medium-sized blades used as blanks for shaping the El-Wad point. This point made by all kinds of retouch served for many years as a guide fossil for a certain chronological stage but has no longer been accepted as such.

The second technological tradition was based on the production of blades/bladelets and has been found in its earliest manifestation in Qafzeh layers E-D, dated by amino acid to 37,000–30,000 B.C. (25), and site Boker A (dated by C-14 to more than 31,000 B.C. and probably around 37,000 B.C.). But the impressive bulk of data comes from site Boker BE, the Lagaman in northern Sinai, and a few sites near Qadesh Barnea (6, 43). The dominance of blades has led to increasing numbers of points, including El-Wad point, as well as numerous retouched bladelets (including the *lamelle Dufour*). Scrapers and burins occurred in low frequencies when compared to the sites of the first tradition. The blady character of assemblages of the second tradition has, of course, led to the hypothesis that Epi-Palaeolithic technologies originated from this tradition.

Finally, what might be a third technological tradition, an independent entity within the first tradition, or a case of cultural diffusion has been known under the label of "Levantine Aurignacian B" (10, 20, 21). As discussion of the vexing terminology used in the literature has been avoided, it should be mentioned here that this term has basically covered the phase which contained typical Aurignacian elements. These included a variety of nosed and carinated scrapers, *lamelles Dufour,* Aurignacian blades, and a poor bone industry, all of which resembled the French Aurignacian. The sites containing this industry had a limited geographical distribution from the Beer Sheva Valley northward and eastward (including Yabrud) up to the Lebanese mountains. Following the few radiocarbon dates from Ksar Akil and Rakefet cave, this industry has been approximately dated to 32,000–26,000 B.C. El-Wad points occurred in higher frequencies only in the earlier occupations of the Levantine Aurignacian B and decreased considerably in the later ones.

Besides the tedious discussions on lithics, much less is known about other aspects of this period. Even the long sequence of Ksar Akil did not provide much data. The rare bone tools are basically pointed or double-pointed and have occurred mainly at Ksar Akil, Yabrud II, El Wad, and Hayonim. A grinding slab with its handstone used for powdering red ocre was found at Qafzeh cave as was a similar one at Ein Aqev. Two unpublished fragmentary skulls were uncovered in Qafzeh in the 1930s and a flexed burial at

Nahal Ein Gev I (1). A few Mediterranean mollusks in various levels have testified to some exchange or long-range movements.

Even an oversimplified summary of site size frequencies has shown that the occupations had limited surfaces of ca 200 m^2 and less. In many of the cave sites such as El Wad, Hayonim, Sefunim, Kebara, etc only a restricted surface was littered with debris.

The geographic distribution of these occurrences covered the entire area of the Levant with few exceptions; no sites were located in hills above 1000 m above sea level. Sites in the Negev and Sinai seem to have represented certain periods (of climatic amelioration?). The same might be true for those in the Judean desert in proximity to the Dead Sea (El Quseir and Mazeaq en-Nag). No site has provided a continuous occupation for the lengthy time span, so Ksar Akil has been the exceptional case.

The faunal remains in the Lebanese-Israeli sites have exhibited the palaeozoological distribution of mammals rather than hunter's choice as suggested in the past. Fallow deer, roe deer, and ibex were common in Lebanon and the game in the southern sites was frequently fallow deer and gazelle, with more bovids in the Jordan valley. The absence of floral remains has precluded even a hypothetical suggestion as to vegetal food resources.

Summing up, it seems that the small mobile band of hunter-gatherers formed the basic social unit during that period, but that several bands retained their own technological traditions for thousands of years.

THE EPI-PALAEOLITHIC

This period has come, during the last 15 years, to be one of the major foci of Levantine prehistoric research. A large number of sites and assemblages have been uncovered and studied, either as a result of regional research projects or following accidental discoveries. The increase in the collected data has changed the previous evaluation of the archaeological importance of this period relative to the Upper Palaeolithic and the Neolithic. Above all, it has destroyed the image of prehistoric man as a cave dweller moving into open-air sites at the end of the Pleistocene. This oversimplified interpretation of human habitation history stemmed from research in the nineteenth century in Western Europe, where the most famous Palaeolithic sites were in caves and rockshelters. Generally these were the locations where we could obtain deep stratigraphic columns and establish cultural sequences. Especially in the absence of absolute dating methods, relative chronology had to be based on stratified assemblages. During this century, however, open-air sites throughout Europe and Africa have attracted increasing attention. One may conclude that during all the Palaeolithic period, caves and rockshelters were the exceptional rather than the most common habitation

places. The intensive use of radiometric dating methods in recent years has enabled the formulation of sequences of open-air sites in many regions of the world, and has encouraged the study of Near Eastern areas devoid of caves such as Egypt, Sinai, the Negev, etc. This achievement is clearly demonstrated in the number of available radiocarbon dates for the Levantine Epi-Palaeolithic. Most of them have derived from the southern Levant (3, 6, 43).

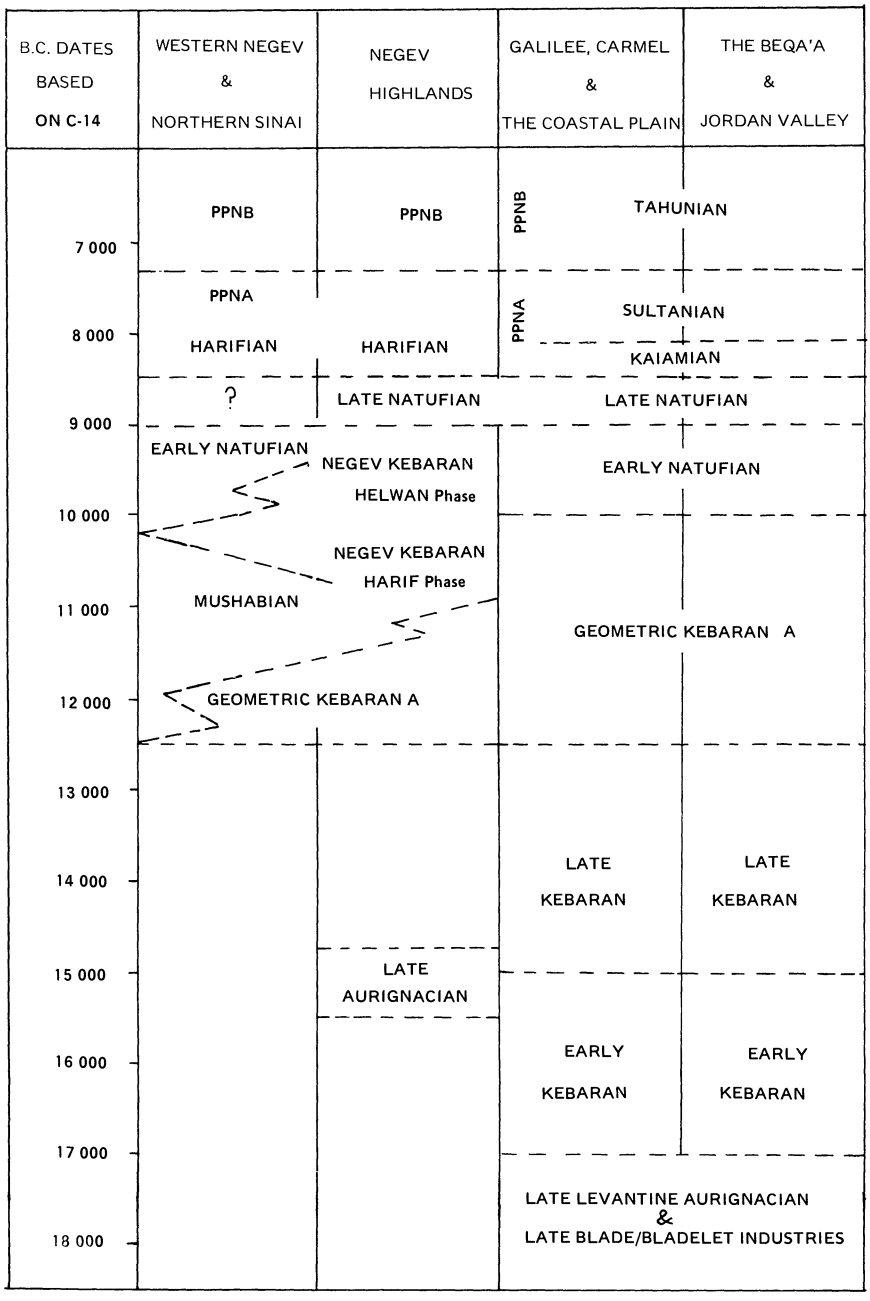
The sites included under the heading of the Levantine Epi-Palaeolithic were classified on the basis of their lithic assemblages which were dominated by the production of bladelets and the modification of many of them into microlithic tools of various shapes. But as we have already noted in the introduction, such definitions are less meaningful today than in previous decades. There were Upper Palaeolithic assemblages that exhibited the same technological characteristics, but their absolute date was earlier than the earliest accepted Epi-Palaeolithic assemblages. The arbitrary line which has marked the onset of the Levantine Epi-Palaeolithic was based on the definition of the Kebaran Complex and has been accepted by many scholars. The earliest available Kebaran dates were ca 17,000 B.C., but possibly another millenium should be added taking into account the deep sequences of sites such as Jaita II, Nahal Oren, Ksar Akil, Hayonim cave, etc (10, 47).

The overall arrangement of the cultural complexes recognized to date in the Epi-Palaeolithic is presented in Table 1, following their geographical distribution. This table stresses the regional approach advocated in this paper and the paradigm that both observed and expected sites should be seen as expressions of hunter-gatherer societal systems.

The climatic conditions during the Kebaran Complex (which lasted from ca 17,000 - 12,500 B.C.) were cold and dry in the northern Levant and cold and wet over a portion of its southern half. It seems that the desertic regions were cold and dry as well. Such a reconstruction was based on palynological evidence supported by the study of alluvial wadi terraces (4, 15, 68). The distribution of the sites has reinforced this picture as scarcely any Kebaran sites are known from the arid areas such as the highlands of the Negev or northern Sinai (in spite of intensive surveys conducted there). However, one may expect some scanty remains in oases.

On the basis of several dozen assemblages, both chronological subdivision and regional variations were suggested for the Kebaran. One such example was the limited distribution of the Falita point (a backed pointed blade with basal truncation) found only east of the Jordan River and in southern Syria. This indicated the possible existence of a prehistoric province delineated by several bands of hunter-gatherers. The potentials for identifying smaller entities has been exhibited by the more restricted geographical distribution of specific microlithic tools or a combination of certain microliths within

Table 1 Chronological table (based on C–14 dates) of cultural entities during the Late Pleistocene-Early Holocene



a radius of 30 - 40 km. Such cases have been recognized in the Israeli coastal plain and in the Lebanese mountains. The lack of many adequate publications and more radiocarbon dates has delayed a more profound analysis of the potential data.

An important innovation that occurred at this time is the use of the mortar and pestle as pounding tools. They were made of basalt or limestone and were sometimes accompanied by grinding tools as well. Their presence indicated a change in vegetal food processing techniques, perhaps the pounding of roasted wild cereal grains or acorns. The identification of the vegetal food is unclear since flotation in Kebaran sites has not produced sufficient plant remains, and the presence of a few domesticated wheat grains in Nahal Oren cannot yet be considered conclusive due to its stratigraphical position (47).

A few marine mollusks scattered in Kebaran sites point to connections with the Mediterranean shore, but the exchange of these is rather limited quantitatively, as during the Upper Palaeolithic.

A climatic amelioration from ca 12,500 - 8,000 B.C. was inferred from palynological and sedimentological evidence supported by the geographical distribution of the sites. Many of the latter were classified as belonging to the Geometric Kebaran A complex and are situated in deserts, some even far removed from known perennial water sources. Their penetration into Sinai reaches almost to the Suez canal and Wadi Feiran in southern Sinai (3). A contemporary desertic entity was labeled "Mushabian," and was considered to be, on the basis of the technotypological features of its lithics, of North African origin. The fieldwork done in recent years in northern Sinai and the Negev has shown that the forms of the Mushabian microliths (mainly curved and arched backed bladelets) and the intensive use of the microburin technique was a trait foreign to previous Levantine industries, but instead is closer to the Iberomaurusian and its affiliated industries in North Africa and the Nile valley. The sites of the Mushabian were dispersed to the foothills of the Judean Hills, i.e. penetrating into a marginal Mediterranean zone (6).

On the other hand, the sites of the Geometric Kebaran A were partially typified by a technological continuation from the Kebaran by the production of narrow bladelets. However, in what may be a later phase or a regional facies, there was a shift to the manufacture of wider bladelets. The completed forms obtained from these bladelets were trapezes-rectangles, either narrow (4–7 mm) or wide (7–10 mm). There was scarcely any sign of intensive use of the microburin technique (for producing oblique snaps) in most of these assemblages.

The total number of already known sites of the two contemporaneous complexes amounts to more than 60, and their publication in forthcoming

years may produce a good example for a geographical overlapping of two different but contemporary cultural complexes (Figure 3).

The sites of this period, apart from rare cases in the Mediterranean zone, were of limited size, amounting to 100 - 150 m^2. Structural remains were encountered only at Ein Gev III and Haon III in the Jordan valley (3), and the only known human remains from Abri Bergy have yet to be published. Pounding tools were uncovered in a few sites, indicating perhaps similar use of vegetal food as in the previous period. Animal bones were frequent in Mediterranean sites, where charcoal was not preserved in contrast to the situation in most of the desertic sites. The fractured bones demonstrated the hunting of mammals according to their ecological distribution: fallow deer and ibex in Lebanon, fallow deer and gazelle in the Jordan valley and Mt. Carmel, gazelle and other antelope on the desert fringes. One can conclude that there was no clear indication of either special man-animal relationship or "hunter's choice" (23).

The following period was considered to form the threshold for the appearance of agricultural societies in the Levant. But before even briefly opening the Pandora's box of the different theories concerning origins of agriculture (26), a summary of the available archaeological data base is required.

The definition of the Natufian culture was based on the sites excavated by Garrod and Neuville in the Holy Land, but lately a few more have been reported from Syria up to the Euphrates valley (16, 65). While using a multicomponent definition of this culture, and not only the lunates (as a "fossil directeur"), it appeared that we could separate Natufian sites from their contemporaries. In the mountains of Lebanon and the low lands of desertic areas, no Natufian sites have been found, and this has not been the result of insufficient research. Moreover, a chronological subdivision of the Natufian has been discerned, based on typological considerations first and supported by radiocarbon dates later. Additional separation between "base camps" and "exploitation camps" has aided the identification of differences in the distribution between Early and Late Natufian sites. The first was located only in the Mediterranean zone while the latter penetrated into semiarid areas dominated by Irano-Turanian vegetation. During the time of the Early Natufian the Negev was inhabited by small bands of hunters named the Negev Kebaran of Helwan facies (43).

Natufian base camps have revealed the remains of rounded dwellings, of which the best preserved and stratified were uncovered at Eynan (Ain Mallaha) in the Jordan valley (48, 51, 65). Their diameter varies from 9 - 4 m, and in one of them postholes were found indicating a possible reconstruction for the roofing. At Hayonim cave several small structures (2 - 3

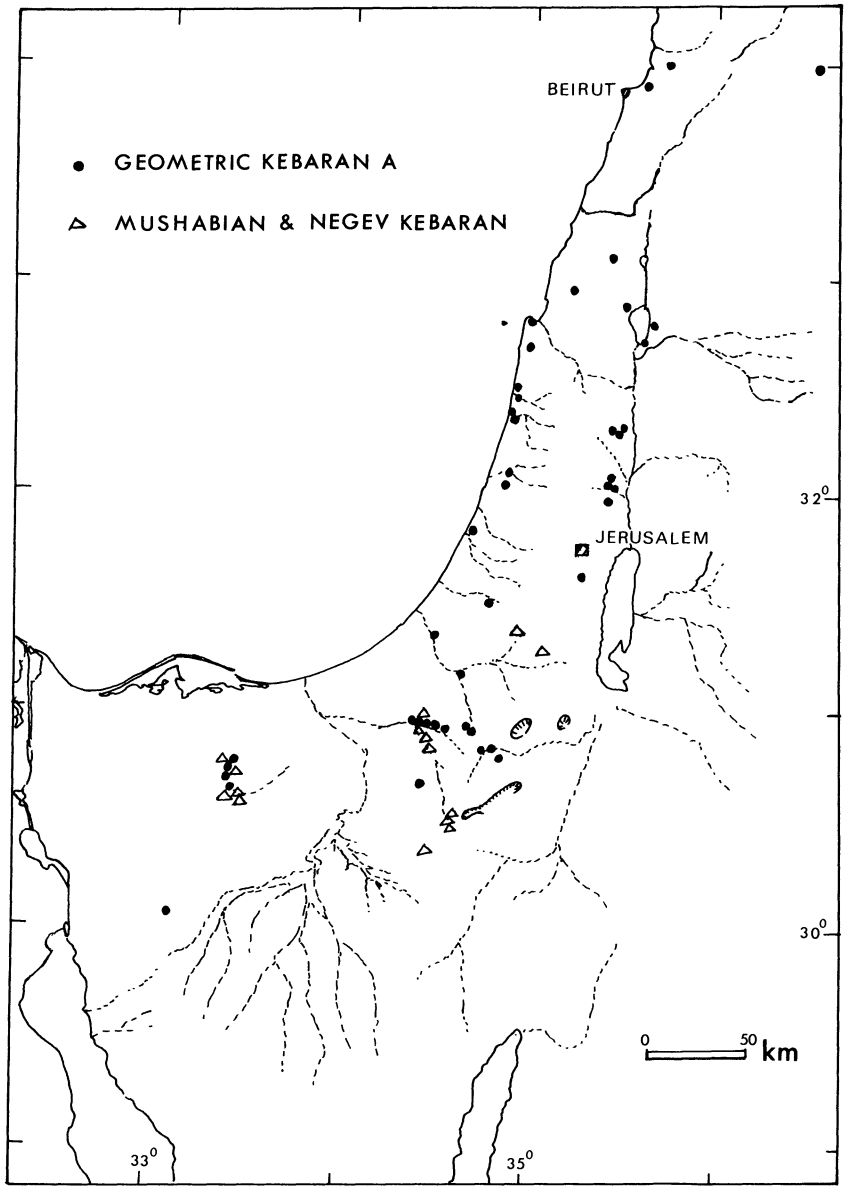


Figure 3 Distribution map showing the overlapping of the Geometric Kebaran A sites and the Mushabian and Negev Kebaran of Harif phase sites.

m in diameter) divided the area into smaller spatial units. In other sites architectural remains were fragmentary.

Another feature was the numerous burials found either as single, double, triple, or collective ones in all possible positions—flexed, semiflexed, and supine. Only in rare cases could undoubted grave goods be recognized, although body ornaments of dentalium shells and bone pendants were slightly more common. In spite of all essays, no clear social hierarchy could be discerned from the analysis of the burials.

The lithic assemblages in base camps were rich, when a rough coefficient of the ratio between the volume of the sediment and the number of tools is used. Numerous pounding tools, and especially heavy ones (weighing dozens of kilos), were found in these sites. A rich bone industry containing tools such as sickles, sewing tools, harpoons, and ornaments is included in this list of features. But more research, especially of small Natufian exploitation sites, is necessary before the full range of site varieties can be better understood.

The abundance of marine mollusks in most Natufian sites was interpreted as a high increase in exchange when compared to previous periods. Those in the Negev exhibit better connections with the Indian Ocean and the Red Sea but Mediterranean shells have been found everywhere. The exchange over distances of several hundered kilometers was indicated by pendants and beads made of green stone believed to be of Syrian origin. Artistic activities are demonstrated also in the available figurines and tool decorations. These fall into the categories of natural and abstract forms. The animal figures were basically of young gazelles but other figures such as a dog, owl, etc are also present. Human figures were slightly schematic.

The Natufians were classified as hunters and gatherers. It is possible that bow and arrow were used by them as hinted by the presence of "shaft straignteners" made of basalt and limestone grooved pebbles that show signs of heating. The bulk of hunted mammmals reflected local environments, such as gazelle and wild boar in the Hula valley, gazelles in the Jordan valley and Mt. Carmel area (more fallow deer in the Galilee), and gazelle and ibex in the Negev. The claims for special man-animal relationship during the Natufian have not been demonstrated beyond doubt (23, 47). Sites closer to the sea show evidence for some fishing, but as an important activity it was indicated only at Eynan (Ain Mallaha), situated on the shore of the Hula Lake. Finally, the domestication of the dog by the Natufians has lately been clearly demonstrated (24).

The scanty floral remains both published and unpublished do not demonstrate the use of domesticated cereals but rather the collection of wild forms. But we should remember that preservation in Mediterranean soils and especially in terra rossa is poor, where even sophisticated flotation methods

have been unable to provide sufficiently large samples of vegetal relicts. Most of the open-air excavated Natufian sites were buried in this kind of sediment (Saaide II, Eynan, Hayonim Terrace, Nahal Oren). The same note is also relevant to pollen grains, and their selective preservation casts doubt on already published results.

The overall archaeological picture has shown that there was a substantial change in the size of sites between the Natufian and its predecessors, accompanied by intensified use of previously invented technologies. The abundance of pounding stone tools has indicated the importance of vegetal food processing, but the scarcity of silos or storage pits and grains makes the interpretation of the evidence a hazardous task. It seems, therefore, that the only sound indication for drastic change are large sites such as Eynan, Nahal Oren, Hayonim Terrace, Mureybit, etc, but whether this reflected population increase or the agglomeration of small bands into larger communities as yet remains an unsolved question. Moreover, the impetus for this change is unknown, and the possible hypotheses that relate it to climatic fluctuations, inherent social changes, technological innovations, different economic strategies etc still remain to be demonstrated decisively.

The several models proposed to explain the origins of agricultural societies justifiably use the Natufian culture as an important link between hunter-gatherer and farming communities (8, 13, 14, 16, 53, 54). Unfortunately, the validity of any hypothesis now depends on more accurate and refined data that should be collected by meticulous fieldwork. The most straightforward aspects to be studied are climatic fluctuations and the palynological record. The construction of detailed records based on the latter, together with the incorporation of radiocarbon dates, should resolve the problem of the "climatic trigger," which has been an important factor in each model since G. Childe, in spite of the different ways it has been manipulated. At the same time the spatial study of extended excavated areas in Natufian sites, whether large or small, should help decipher the problem of whether archaeological assemblages can express seasonal variability.

Until now none of the demographic models could be supported directly by sufficient convincing field evidence. The expansion of what may be Late Natufian base camps into the semiarid Negev highlands has supported a suggestion for minor climatic amelioration. But the basic contents of these sites (Rosh Zin and Rosh Horesha), including some structures, a few pounding tools, and rich flint assemblages, were not significantly different from the contents of the sites of the succeeding desertic culture known as Harifian.

The radiocarbon dates for the Harifian have suggested a general contemporaneity with the agricultural communities of Jericho and Mureybit. Its large base camps were located in the higher Negev while small seasonal

camps, typified by high frequencies of the Harif point (that might have served as an arrowhead), were distributed in the lowlands from northern Sinai to the margins of the Beer Sheva Valley. Structural remains and a fair number of pounding and grinding tools were uncovered in the partially well preserved base camp at Abu Salem on Har Harif (43). The hunting of gazelle and ibex occurred in almost equal proportions. Traded mollusks came mainly from the Indian Ocean and the Red Sea, though Mediterranean species were also present.

The faunal remains, lithic assemblages, and site distribution of the Harifian have been interpreted as representative of a hunter-gatherer society. The same impression has been gleaned from the earlier Late Natufian sites in the Negev. This indicated that the cultural-ecological dichotomy between hunting-gathering and farming communities began with regional differences in the Natufian culture and continued during the following millenia. Such coexistence, stated here in a rigid form, was clearly demonstrated when we examined the later evidence concerning the contents of the so-called Pre-Pottery Neolithic B sites. In deserts such as Sinai, or in Trans-Jordan, hunting bands continued to migrate in some kind of seasonal pattern. It was mainly due to the lack of published reports that the missing millenia (end of the Ninth to the early Seventh millenium B.C.) could be viewed as casting doubt on this overview. But the still unpublished material from Abu Madi (in southern Sinai) and the cave of Nacharini (in the Anti-Lebanon mountains) have provided partially microlithic Epi-Palaeolithic assemblages with double bilateral notched arrowheads that did occur in the Eighth millenium Pre-Pottery Neolithic A sites. If this description of the evolution of farming societies in the Mediterranean lowlands (with a tendency to semiarid climate) next to the "unfavorable" regions inhabited by hunter-gatherers is correct, then the general cultural pattern of the Neolithic is understood and we can proceed into an examination of the details.

THE NEOLITHIC

Since the early 1950s, when R. Braidwood initiated archaeological research to recover the basic data related to the emergence of urban civilization in the Near East, the traditionally called Neolithic period has been the focus of much attention. It would be a superficial effort to try and summarize the bulk of facts, uncertainities, and arguments related to this period since several much more detailed reviews are available to the reader (13, 14, 16, 44, 53, 60). In this short summary only the major facts concerning those early stages of the Neolithic have been dealt with.

The increasing number of radiocarbon dates has made possible the creation of a framework for the earliest stage, also commonly known in the southern Levant as Pre-Pottery Neolithic A, between 8500/8300–7500/7300 B.C.. During that time sites of varying sizes, from 2000 - 3000 m^2 (like Nahal Oren) to 40,000 m^2 (like Jericho), have been encountered. Others such as Mureybit, Tell Aswad, Gilgal, and Netiv Hagdud also fall within this range. The increasing population, when compared with the previous Natufian communities, occupied rounded or oval structures constructed from the local raw materials available, either undressed stones or unbaked bricks. Domestic installations such as fireplaces—flat slabs with cup marks—were common, and the floors at Jericho testify to the use of rounded mats. The flint industry was dominated by axes-adzes, sickle blades, and arrowheads. Technical innovations were the polishing of stone axes and the baking of flints in order to facilitate their final shaping. In the ground stone industry an important shift took place. Grinding slabs and bowls and handstones (manos) became common, replacing the mortars and pestles of previous cultures and demonstrating the change in vegetal food preparation processes. Beyond the ordinary tool forms the regional variability in the Levant has been exhibited in the detailed typology of each tool group, and differences between the northern and southern parts could be detected (16).

The economy of these villages was based on continued hunting of the same type wild game as their Natufian ancestors. In Jericho and Nahal Oren this was mainly gazelle, while in Mureybit wild ox and wild ass were hunted. The question of totally artificial cultivation of cereals has still to be clearly resolved. While the presence of domesticated cereals has been demonstrated in Jericho, this was not the case at Mureybit. Most scholars have agreed that man practiced the intensive harvesting of wild stands of cereals and by that activity encouraged the process of domestication. By the end of the Eight or Early Seventh millenium B.C., domesticated cereals occurred in almost all these early villages (16).

The following stage of the early Neolithic has been radiocarbon dated to 7500/7300 - 6000/5800 B.C. and could be further subdivided into two phases. The total number of sites increased, and their geographic distribution has supported the claimed Boreal conditions reconstructed for the Levant on the basis of palynological evidence (31). The dichotomy between these sites has now been clearly demonstrated following the excavations of desertic sites in Trans-Jordan and in southern Sinai. The special features of each group will be examined.

The Mediterranean sites (including those in oases) ranged in size similarly to their predecessors, from 3,000 m^2 to 40,000 m^2. The architectural

remains have revealed an important cultural change. Rounded structures were replaced by squarish and rectangular houses. Plaster floors were a new innovation originating possibly in the northern Levant and indicative of the burning of chalk in kilns or open fires. Another technological improvement was the knapping of blades from "naviform" cores (having two opposed striking platforms) in order to obtain long blades with straight profiles. These blades were modified into finely serrated sickle blades or arrowheads (regularly shaped by pressure flaking). Axes and adzes continued to be important in the tool kits in sites where agricultural activities were well testified. Grinding stones continued the same trend as before, and slabs with two grinding levels separated by a shallow step became a common form.

Both ritual and artistic activities were exhibited by the appearance of plastered skulls at Jericho, Tell Ramad, and Beisamoun. They testified to the existence of a cult, perhaps related to the "heroes" or "godfathers." Clay figurines of animals represented either domesticated (ox, goat) or wild forms (ibex).

Economically, one could speak of a radical change. Most of the earlier game gave way to a dominant percentage of goat-sheep and bovids, and there was no doubt as to their domestication in later millenia. Without discussing whether the bones show actual evidence of domestication, it is sufficient to stress the drastic change in the faunal spectrum evidenced in Mureybit, Abu Hureira, Beisamoun, Jericho, and Abu Gosh (16, 23, 40). The appearance of sheep in Jericho, far away from their original habitat, has also supported this view (19). The picture varied in semiarid and arid areas. In Beidha the ibex was still the main game, and in southern Sinai only wild animals occurred in the Neolithic dumps.

The traditional way of life as hunters-gatherers of small bands in Sinai during this period was expressed not only in their bone refuse but in their structures as well. They continued to build rounded-oval structures and their tool kits were based on arrowheads. Grinding stones of the simpler types occurred in large numbers in sites provisionally interpreted as summer camps. The collection of Red Sea shells was another activity of these bands.

There has been almost total agreement among scholars about the cultivation of wheat, barley, and lentils in the Seventh millenium B.C.. Obviously more carbonized seeds are required to fill in gaps in our knowledge, and sites buried in terra rossa soils are not the best candidates for good preservation (i.e. Munhata, Tell Eli). The cultivation of einkorn in Jericho has indicated the existence of trade, and farming in semiarid areas has brought about the hypothesis of the early origins of irrigation (16). No clear archaeological evidence has as yet become available for this activity, but it seems that the

specific location of these early farming communities on alluvial terraces or fans necessitates special discussion.

Examination of the general location of many of the known Neolithic sites has shown that they were buried in alluvial deposits. One of the clearest cases was at Jericho. Even a cursory examination of the section of Trench I (36, Figure 4) has shown that most of the deposits above bedrock and in front of the Neolithic wall were water-laid. The whole area west of the tell today still slopes toward it, and this accumulation has reached the height of the top of the tower. Even the published section of area EI (at the north end of the tell) has shown the wadi infilling, and this was used by the excavator as a supportive argument for the temporal abandonment of the site between the PPNA and PPNB periods (36, Figure 6). In brief, it seems that the site of Jericho was built on an active alluvial fan which continued to build up during the whole Neolithic period. At the beginning the inhabitants built a free-standing wall, but in the later phases, when the accumulation inside and outside built up, they added a terrace wall as a protection from floods. Under these circumstances it is understandable why the enigmatic tower was built not as a regular fortification element outside the wall but rather inside from whence one could enter it. Finally, the fosse, presumably cut in the bedrock, was possibly a channel to divert the water.

Other Neolithic sites should reveal a generally similar picture. Thus, for example, a few more sites along the Jordan valley were partially or completely buried in alluvial fans. These included Netiv Hagdud (12 km north of Jericho), radiocarbon dated to the PPNA; Munhatta (49), at the outlet of Nahal Tabor; Tell Eli, in the fan of Nahal Yavniel (52); and Beisamoun in the Hula Valley. Both Munhata and Tell Eli had the same range of industries, and the latest buried levels were dated to the end of the Fourth millenium B.C. Beisamoun had several Neolithic levels but the latest was possibly of the Fifth millenium B.C.. Only excavations on the outskirts of these sites could clarify the question of whether the inhabitants built protective walls against floods bringing masses of mud.

Perhaps the site of Beidha has already provided a partial answer (37, 38). The site, located in the Edom mountains of Trans-Jordan, has revealed a rather long terrace wall which protected the site from the main wadi stream. This could not represent a fortification system, according to the excavator, because she exposed a staircase built on the outer face of the wall. Later, however, like the walls of Jericho and the other sites, the wall at Beidha was buried by accumulating wadi sediments.

Most of these alluvial fans were built up of fine-grained materials (silt, clay, etc), and this kind of accumulation continued until the days of the Early Bronze I. Preliminary studies have indicated that during the Early

Bronze II and later, severe desiccation started and floods carried boulders and cobbles as they do today. During the Third millenium B.C. the present climatic regime established itself, and this description has been supported by the palynological evidence.

Alluvial fans were used as cultivated fields, with the floods fertilizing them almost every year by spreading another layer of silt and clay. But the interrupted sequences of all Neolithic sites of that epoch presumably testify to the practice of some kind of shifting cultivation, again a suggestion made independently on the basis of pollen spectra (41).

The societal units were responsible for these relatively more sophisticated organized activities than we tended to believe two decades ago. They also had long-distance connections, as evidenced in the following merchandise moved in the Levant: Turkish obsidian, the idea of plaster floors, einkorn wheat, sheep, and green stone were all brought from the northern Levant to its southern fringes. Red Sea cowries were transported northward. This supports the argument, raised earlier on the basis of the Beidha lithics and structural relicts, that there was no break between the two major stages of the early Neolithic, but rather local evolution enriching itself from diffused ideas and materials (45).

AFTERTHOUGHTS

For such a generalized review of the prehistory of a certain region it is rather irrelevant to dwell on theoretical conclusions. Several proposals for future research have been mentioned briefly in the text. However, in these final paragraphs I would like to present some specific approaches that seem to be most fruitful for our current understanding of Levantine prehistory.

Microwear studies of entire local assemblages could contribute greatly to investigations of prehistoric economics and culture change. This might aid in replacing generalized temporal taxonomies with more meaningful classifications reflecting short-term or localized economic or social variation. Such problem-oriented taxonomies may prove useful, but there are pragmatic limitations in their application.

In spite of the great interest in the remains of early man, it appears that potentials in the Levant sufficient for geologic exposures are insufficient for "hominid hunting." Perhaps some areas in Iran or Turkey might fill this gap, but the potentials which characterize the East African scenery are absent here. Some insight into early man's patterns of behavior can be gained from the excavations of Acheulian living floors. Such an operation at 'Ubeidiya would require digging techniques similar to that for a large open mine. It would be easier to attempt it in a Late Acheulian site.

Even in the study of the Middle Palaeolithic there is a feeling of a dead end. The lack of radiometric dates prevents the choice of proper theories for the understanding of the evolution that took place during this period. The development of thermoluminescence dating of flints or more amino acid datings may provide the necessary time scale. For the immediate future it seems more valuable to try and excavate complete discrete living floors in Mousterian sites and to analyze their spatial variability in comparison with later and earlier horizons.

The potentials of the Upper Palaeolithic record have not yet been exploited. The fact that many open-air sites are buried in alluvial terraces requires more careful surveys. But they will be, if not covered by too many meters of sediments, adequate for extended excavations. The existing knowledge of the technological variabilities during this period indicates the potential in using theoretical anthropological approaches, but more radiocarbon dates are essential.

Finally, the origins of agriculture in the Levant are still one of the most attracting topics for study because of the combination of the very large number of sites known from the end of the Pleistocene and early Holocene and the uniqueness of this region in the Old World. The potentials of buried open-air sites discovered in recent years indicate that we are far from having a complete picture. The excavations of large areas in any kind of site of this epoch, along north-south and west-east axes of the Levant, should reveal in the next decade a better picture of regional variety. The systematic study of territorial archaeological entities, with the radiocarbon control of the chronology, will help to understand the causes, processes, and outcomes of the agricultural revolution in the Levant which formed the foundations of our urban civilization.

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